



MAGAZINE

PRICE TWOPENCE

MARCH 1953



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FRONT COVER: *The band of the Grenadier Guards approaching Horse Guards Parade. Photograph by Miss E. Atkins (Head Office).*

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ACCIDENTS NEED NOT HAPPEN

I.C.I.'s Successful Campaign for Safer Working Conditions

By H. R. Payne (Central Safety Section)

Since 1929 I.C.I. have reduced their number of accidents per hours worked by 75%. How was this done? The short answer is care, cleanliness and forethought in design. For this end many people have worked hard behind the scenes. This article spotlights some of them and their achievements.

If one has not worked in a factory, any mention of accidents brings chiefly to mind zebra crossings, posters, and that unfortunate slogan "Safety First" (which, strange as it may seem, has never been used in I.C.I.). But to the 80,000 men and women in our works, with their managers, supervisors and technicians, the word accident means something which can usually be avoided.

They have proved their point by reducing their accident rate by about 75% since 1929. This is a remarkably fine achievement, especially in a heavy industry—and one which compared quite well with others when the joint effort first began. They have gained for I.C.I. a reputation second to none in industrial safety. Today we have in I.C.I. cleanliness and tidiness instead of dirt and muddle; forethought in design; proper example from leaders; and pride in doing the job without waste, including the waste of accidents.

The successful pursuit of such a policy over the quarter of a century since I.C.I. was formed is by no means a matter of chance or luck.

The drive began, as did so many things we now take for granted, in the fertile mind of the first Chief Labour Officer, now Sir Richard Lloyd Roberts. Both he and the Hon. Henry Mond (later the second Lord Melchett), then Labour Director, regarded every human aspect of industry at that epoch as being capable of improvement.

Time has certainly proved their views correct. In those early days the first steps towards better safety were taken when joint safety sub-committees of the works councils were approached and modest programmes of propaganda in the works instituted. To many, the idea that works accidents were more often preventable than not was a new one and, such is our British character, suspect on that score alone. "Grand-

motherly" was possibly the mildest adjective arising from the traditional view that most accidents would not happen if people used their brains or had a little sense.

Moreover, for the managerial and technical staffs this safety business had the appearance of adding a little more to the load—as indeed it has. Suggestions that physical conditions could be improved from a safety point of view or that a machine could be made more foolproof were thought to imply criticism, whether the thought came from a safety committee or anywhere else.

On the other hand, it was clearly rather pointless to display safety posters and to urge works councils and safety committees to influence their fellow workers if the traditional conditions of the works contributed to risks and carelessness. There were hoary old sayings about muck and money to be combated and sturdy references as to what was good enough for our fathers to be skilfully passed over.

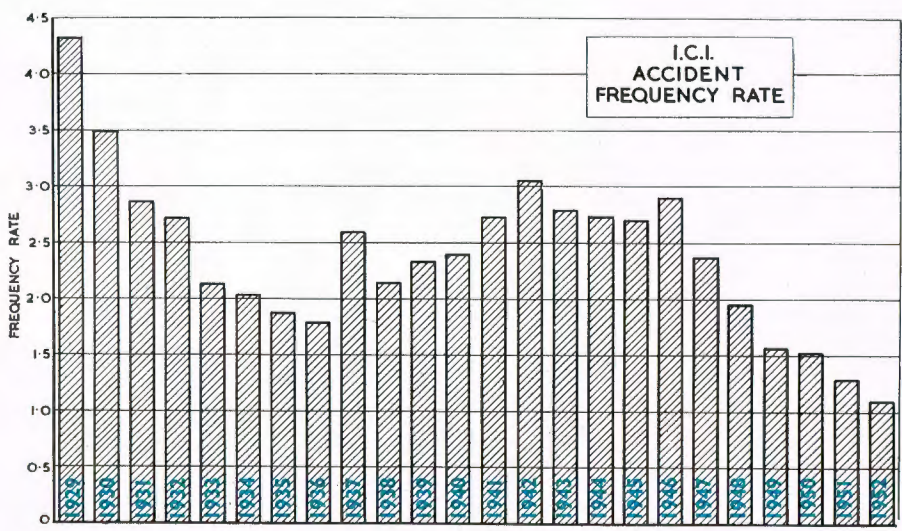
Those were just some of the first difficulties to be overcome. At about the same time those of us who were beginning to see the possibilities were very much encouraged when the Association of British Chemical Manufacturers began to tackle the safety problem from the other end—from the end of design in the chemical industry. We have only space here to say that, following this example, the safety aspect of their industries is becoming increasingly a matter for close attention by employers' associations and joint industrial councils.

But to get back to our own story. Personalities now enter largely, for even in a team job such as this has happily proved to be there are always leaders and—even more fortunately in I.C.I.—a host of efficient men willing to lend a hand, often regardless of their own personal convenience. They mostly worked quietly behind the scenes, from which we now take a few of them.

Mr. A. T. S. Zealley, then general works manager of Billingham and now a member of the Board, initiated the first big step forward in the Groups (as the Divisions were then) when he appointed Dr. W. Idris Jones, a most able chemist and production man, to be the safety officer at Billingham in 1928. Dr. Idris Jones is now head of research in the National Coal Board. Greatly daring as it seemed at that time, Dr. Idris Jones produced the Billingham Safety Handbook of 1928, which illustrated safe and efficient methods of doing everyday jobs where many accidents had previously occurred. Mr. Zealley was again the pioneer in I.C.I. in encouraging the production staff to give special regard to safety. Billingham was then in course of construction and being brought into production at a tremendous rate in an area where these safety plans were very new ideas indeed.

For about four years these early efforts were followed by a fair measure of success. Propaganda—it is not a popular word and has developed into safety education today—can contribute substantially towards a reduction of accidents if it is pursued with consistent energy and purpose, but it is less than half the battle as far as industry is concerned. The other half of the battle is planning production in a manner that makes it more difficult for an accident to happen.

In the early thirties Mr. John Rogers, our Chairman, added the duty of Labour Director to his task of Technical Director. In the matter of accident prevention he caused enquiries to be made in this country and the United States and Canada and quickly reached the conclusion that safety was an integral part



I.C.I.'S SAFETY RECORD from 1929 to 1952. The frequency rate is the number of lost-time accidents per 100,000 hours of work.

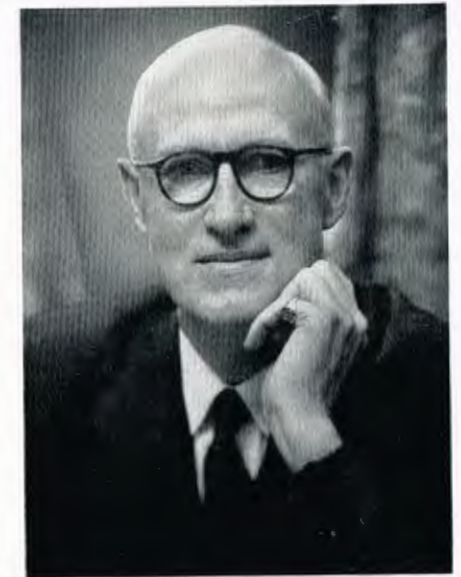
MEN WHO PIONEERED I.C.I. SAFETY



J. MCKILLOP
Father of engineering safety



J. T. OWEN
Mine accidents can be avoided



SIR EWART SMITH
Man behind safety campaign

of production and must be so regarded and organised if the best results were to be had.

On 1st January, 1933, Mr. Rogers appointed Mr. A. J. Grimwood and Mr. C. S. Robinson, two senior members of the Technical Department, to give attention to safety in the factories and works from the point of view of technical management. Meanwhile Mr. Rogers and Mr. Adam Wilson, then chairman of the I.C.I. Engineering Committee, had agreed in principle to the production of a series of I.C.I. engineering safety standards as a recommended guide to engineers and designers in our works. These standards collected together

examples and models of good practice in the civil, mechanical and electrical branches.

The result of that pioneer work in I.C.I. is that today you can climb up and down our multi-storey buildings—and we have many of them—in reasonable comfort and with a feeling of security. In the old days the plant was built first and the access afterwards. This is but one example of the principles which, in twenty years, have become standard in modern industry. In 1930 a well-guarded machine bore a marked resemblance to a birdcage. An efficient machine made in 1953 looks just what it is: an efficient—and safe—machine.



G. W. TALBOT
Advocate of safer engineering



R. E. TUGMAN
Doyen of safety officers



F. B. WRIGHTSON
Pioneer of machine guarding



THE BLOT



Issued by the Royal Society for the Prevention of Accidents, Terminal House, 52 Grosvenor Gardens, London, S.W.1.

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THE BLOT—A FAMOUS POSTER PROMOTING TIDINESS, ISSUED IN 1938

I.C.I. personalities have played a notable part in this progress. Mr. John McKillop, Chief Engineer and a director of Dyestuffs, was appointed by the I.C.I. Engineering Committee as chairman of its safety sub-committee, and he has a firm place as the "father" of the new standards. It is good to record that he still flourishes, fully occupied though officially retired.

When so many contributed it is a little invidious to mention names, but his colleagues of that time will agree that the work of Mr. F. B. Wrightson of Dyestuffs and now chief engineer and a director of Nobel Division, was outstanding, particularly in the new standards for guarding moving machinery, in which he was very much the prime mover. Mr. G. W. Talbot, now chief engineer and a director of Lime Division, was mainly responsible for work which has made I.C.I. works railways (we have hundreds of miles of them) much safer; and Mr. G. S. Jones, now a director of Leathercloth Division, worked hard and unselfishly behind the scenes tying up loose ends—quite a task where so many sturdy individualists were concerned. Mr. R. Threlfall of Alkali Division, behind whose good nature and modesty is a great wealth of technical knowledge, with Mr. T. E. Houghton and Mr. Wrightson set up electrical standards of safety which were so thorough that they still excite warm argument.

All this may seem rather dull history, but the very notable effect has been a great reduction in all kinds of accidents formerly due to technical causes.

But it is the works managers who, in the midst of all their other work and with the co-operation of their workers, actually achieve new low accident records. Safety departments and safety officers in I.C.I. are advisory only because of the principle that no "outsider" should be in a position to break the line of command and come between a supervisor and the workers in his charge.

There are many outstanding characters among the works managers and supervisors who have added first-class safety records to their other distinctions. From the days when he was a works manager Mr. P. K. Standring, now group director for Dyestuffs and Pharmaceuticals Divisions, has insisted that safety is a prime responsibility of managements; the fine record of Dyestuffs Division is due largely to the wholehearted way in which this principle is pursued.

Mr. Owen, the underground manager of the Billingham mine, has, for example, been chiefly instrumental in creating such interest that the workers have in five years reduced their accidents by 90% to a rate of about 1·2 lost-time accidents per 100,000 hours worked, which is a phenomenal record for underground work.

The Fleetwood works of the Alkali Division has gained no fewer than five no-accident periods of a million hours, thanks largely to the drive and leadership of Mr. G. Hadman, the works manager, over several years.

It should be said also that the tremendously high standards

of tidiness reached by most works managements have had an undoubted effect in preventing the carelessness from which accidents often result.

Today, at our present stage of progress the safety officer, both at Division and works level, is perhaps the key man. On his record of performance and his personality depends the consideration which the management and supervisors have for his views and—equally important—the confidence which the workers have in his fairness and judgment. This is most important, for one of the proved ways of reducing accidents is to analyse every one which occurs with absolute impartiality, and this in I.C.I. is done under the following heads:

Design, Construction and Operation	Supervision and Training	Personal
Faulty design and layout	Failure to provide suitable protective equipment	Failure to use suitable protective equipment correctly
Faulty construction and installation	Untidy works	Physical disability
Inefficient light, heat or ventilation	Inadequate supervision	Breach of instructions or rules
Faulty operational methods	Inadequate training	Unsafe attitude
Mechanical failure or failure of materials	Inadequate rules or instructions	
Inadequate guarding of machinery		
Inadequate maintenance		
Faulty design of protective equipment		

It will be appreciated that it has taken many years to build up the mutual confidence among all ranks which is necessary before such a frank analysis can be made. For this excellent state of affairs the safety officers are entitled to much of the credit.

At the beginning of this article was quoted the fairly common view of twenty-five years ago that accidents would not happen if people used their brains or had more sense. If that were true we could, in relation to our improvement in accident records, now presumably demonstrate that the use of "brains" and "sense" in I.C.I. has increased by some 400% since 1929. This is improbable, and we must fall back on our knowledge that a lot of people have done a lot of hard work, most successfully, to achieve a first-class record for their workers, their Divisions and the Company.

On the safety side we look forward to the next few years, during which our aim will now be to halve our present rate of little more than one lost-time accident for every 100,000 hours worked.

Information Notes

THE MAU MAU TERROR

By D. R. Scorer (Managing Director, A. E. & C. I. (East Africa) Ltd.)

This unusually vivid and detailed description of the Mau Mau terror was published in a recent issue of Outlook, the house magazine of African Explosives and Chemical Industries Limited, an associated company of I.C.I.

"If I am asked to bring the head of a European and I refuse, this oath will kill me.

"If I am called at any time during the night, if I don't go, this oath will kill me.

"If I reveal any secrets of Africans who are Mau Mau members, this oath will kill me.

"If I am called during the night and I am naked, I will go naked.

"If I see anyone stealing European property, I will not tell about it. Instead, I will assist him to hide it. If I refuse, this oath will kill me.

"If members agree to do anything, whether good or bad, and I refuse to obey, this oath will kill me."

These oaths were quoted by a young African in evidence against seventeen Kikuyu charged with being present at a Mau Mau ceremony. There are other oaths which are known to have been taken: land belongs to no one but the Kikuyu; not to help Europeans or to sell land to them; to create conditions which will cause white people to leave the Colony; a denunciation of the Christian faith; a pledge to steal firearms from Europeans: if Jomo Kenyatta is arrested, to follow him wherever he is and free him; when the reed buck horn is blown, not to leave a European farm before killing the European owner.

These oaths have been formulated by the leaders of the movement, who have cleverly and shrewdly founded it upon an exact knowledge of the psychology of their own people and the fears and emotions which remain in the inner recesses of the African's mind, no matter how close his association with western civilisation or its forms of "education." The Kikuyu has always been afraid of the unknown, of witchcraft and evil spirits and oaths and curses, and afraid of the consequences of ignoring or defying them.

The ceremony of administering these oaths is not standardised but follows a general pattern; it is usually carried out in a hut or other building at about midnight. Members of the community who are expected to require "persuasion" are told that they are invited to a drink party, which in fact usually

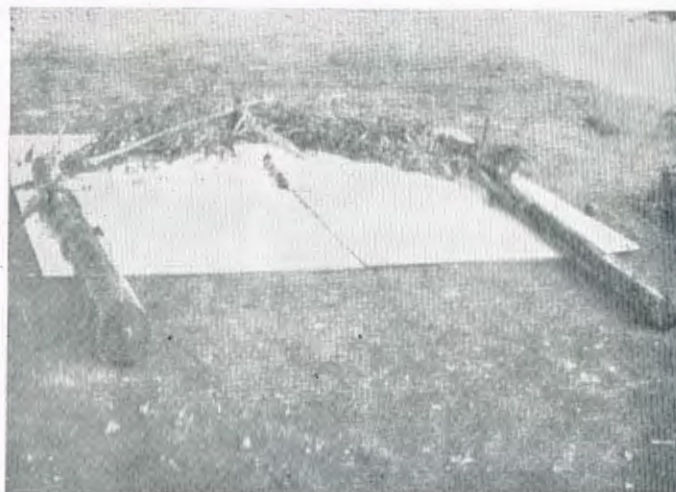
takes place as part of the ceremony. A sharp rap on the door of a hut late at night announces the arrival of the summons to attend; should the victim refuse to go, or show reluctance, he or she will be dragged to the ceremony and beaten if necessary.

Lieutenants of the chief officers of the society in the area escort the initiates to the ceremony. When they pass inside they have to cast off any objects of metal and all European-style clothing. Passing through an arch made of banana poles, green twigs and leaves, the initiates are put in charge of a small group who administer the oath.

A circlet made of grass is placed on the victim's head or round the neck, and other loops on the wrists. A banana flower or hollowed-out banana pole into which has been poured blood from a sacrificial goat freshly killed is passed round the heads of the initiates after some earth has been mixed with the blood. Then a stick which has been dipped in the mixture is held by each person as they take the oath.

The figure seven appears frequently in the ceremony. In some cases the blood and earth is passed round the heads of the initiates seven times; in others they have to walk in a circle seven times; sometimes they bite goat's meat seven times or take seven sips of blood. At some ceremonies the eyes of the goat, taken from their sockets, are placed on either side of the flower or other receptacle for the blood and earth. Sometimes the contents of the stomach of the goat have to be tasted. Initiates are expected to pay an entrance fee, which is sometimes as much as £2 or £3.

The young Kikuyu who gave the details of the Mau Mau oath mentioned above described the ceremony which he had to undergo. He had to strip and pass through the arch seven times. A man circled his head seven times with meat. Afterwards he squatted on his heels facing Mount Kenya. Each time he made one of the seven promises he was told to insert a small bundle of twigs into a piece of sheep's intestines hung between two sticks in the ground. He said that after the ceremony all present were asked to contribute money; he had none, but was told that 7s. 6d. would be taken from his following month's pay.



AN ARCH OF BANANA POLES, green twigs and leaves through which Mau Mau initiates pass before taking the oath

These oaths and their method of administration are the basis of the present terrorism in Kenya.

The head of the movement has always been understood to be Jomo Kenyatta, who was arrested on 20th October, 1952, when the Government of Kenya declared a state of emergency. The arrest of Kenyatta was a ticklish operation, as it was expected that the Mau Mau had been well trained to endanger European lives and property in the event of the arrest. Precautions had therefore to be taken in the form of the provision of increased military forces and the strengthening of the police services before the arrest could take place.

About thirty years ago a political organisation was formed among the Kikuyu to advance political aims and exploit the so-called "land-hunger" in the tribe. It was called the Kikuyu Central Association. The movement developed without clear direction and deteriorated into an anti-British, anti-Government organisation which was proscribed at the outbreak of the last war. It did not die, however, and it appears that the Mau Mau society and some other less active secret organisations are its offshoots.

The Mau Mau is able to cast its net wide. The Kikuyu have spread from the coast to Lake Victoria to Uganda and parts of Tanganyika. The tribe provides many domestic servants for Europeans, and there are Kikuyu clerks in every Government department. There is no doubt that the Mau Mau movement has spread to all areas where there are Kikuyu in any numbers and that in most places there are cells actively propagating its ideas. It has been found among immigrant Kikuyu in the Northern Province of Tanganyika, in the areas of Mount Kilimanjaro and Mount Meru.

The Kikuyu are one of the largest tribal groups in the Colony; they are intelligent and precocious, and though many of them are still addicted to witchcraft and ancient tribal customs they have quickly mastered the superficial techniques of Western politics—mass meetings, delegations, resolutions and petitions.

The hold which the Mau Mau oath has over those who swear it is extremely strong, and cases have occurred of Kikuyu who have been loyal servants for many years refusing to admit

to the employer whom they have served so long that they have taken or administered it, even though they have been arrested in the act by the police. For this reason conviction of the offenders is difficult; conviction is even more difficult owing to the fact that police witnesses either disappear or are intimidated before they have a chance to give evidence.

The aims of Mau Mau are clear enough. While the Kenya African Union conducts a campaign above ground for political power and authority, the purpose of Mau Mau is to step up the pace of political change by menacing the authority of the Government and fostering trouble at all levels and by all means. It is unhappily true that the Kikuyu are suffering from too large a dose of civilisation and its freedoms administered too suddenly.

It is encouraging that many Kikuyu who have taken the Mau Mau oath are approaching their local Government representative to undergo ceremonies to cleanse them of their illegal oath. These cleansing ceremonies are conducted by witch-doctors in company with Church of England and Roman Catholic padres. An old witch-doctor performing a ceremony near Nanyuki, at which 400 Kikuyu were cleansed, is reported to have had his face daubed with ochre and to have worn a colobus monkey-skin headdress and an R.A.F. greatcoat. The procedure is for the witch-doctor to condemn those who use violence, who hurt and kill cattle, who burn houses and property and who use witch-doctors' magic for Mau Mau.

The task of eliminating from Kenya the influence of Mau Mau is likely to be a long one. The first phase of the "Jock Scott" operation, which began with the declaration of the state of emergency, was to restore order to the Colony; the second phase, which was the pursuing and rooting out of Mau Mau by vigorous patrolling and sweeps in the bad pockets of the Reserves, presented an optimistic picture by the middle of November. The third phase is the establishment, on a permanent basis, of numerous police posts in the Kikuyu Reserves and the gradual changing over from what was a show of force and a series of patrols and sweeps in bad areas into a close, regular policing of the Reserves.



MAU MAU PARAPHERNALIA found in a house in Nairobi. In the picture are seen an arch of banana plants, grass circlets and other foliage assembled inside a circle of two goat skins.

PROS AND CONS OF BIG BUSINESS

By W. J. Worboys (Commercial Director)

A few months ago Mr. W. J. Worboys, Commercial Director, gave an address to the Canadian Chamber of Commerce entitled "The New Competition." His careful assessment of the advantages to the community which big business brings must be read against the background of the Anti-Trust laws of the United States.

MANY people who are voluble on the subject of bigness in industry are lacking in any precise knowledge of business or industrial management. It behoves us, as businessmen and industrialists, ourselves to weigh the national advantages and disadvantages of bigness and, if we believe that bigness is in the people's interest, then we must be prepared to expound and press our views in all those places where public opinion is formed and where governmental policies are formulated.

This I think really is important. Manufacturing industry is the main source of national wealth, and if legislation were to prevent the healthy growth of industry in our countries, then rising standards of living and social advance, which we all hold dear, would undoubtedly be threatened and, indeed, the very security of our countries might also be endangered.

The arguments commonly advanced against bigness in business are:

1. That bigness means the concentration of economic power in hands not subject to the will of the people.
2. That bigness stifles or suppresses competition.
3. That bigness is soulless and submerges the individual and, as a corollary, it is bureaucratic and stuffy in management, and therefore inefficient and lacking in vigour.

Let us for a moment consider these objections to bigness. Big business undoubtedly does mean that some economic power is concentrated in the hands of the big corporation, especially if they are the only manufacturers of a basic product; but such concentration of economic power is in practice only a bad thing if it is used against the public interest. Anyhow, the amount of economic power so concentrated is frequently exaggerated because the customer retains the ultimate power—he need not buy or he can raise a great fuss—and there are, indeed, other countervailing powers, for example the trade unions.

Also, my experience in the United Kingdom and elsewhere is that the big or monopoly manufacturer is today always careful when formulating his policies to take national interests into consideration, even indeed excessively so, and certainly much more than many smaller manufacturers do.

Responsibilities of Management

We should remember that nowadays the big corporation is run by managers, not by proprietors, and the managers generally are very conscious of their responsibilities towards the customers, the shareholders, the workers, and the nation. It would today be hard to find examples, common though they were in older times, of such abuse of economic power by big business as the buying up of new inventions in order to sup-

press them, or of big business killing small competitors by ruthless price policies and then exploiting the consumer by excessively high prices.

My experience is that big business does not stifle competition. Directors of big businesses are nowadays very conscious of the power of minority interests, and for some classes of product the smaller manufacturer can, so far as prices are concerned, keep the big manufacturer on his toes because, to a large extent, he can "ride on the back" of the big manufacturer as he does not have to maintain the same sized establishments or do as much research, or give as much service.

Furthermore, the nature of competition is changing: no longer is competition confined to product A made by one manufacturer competing against product A made by another manufacturer. Today product A probably experiences competition from products B, C and D. There are frequently, in fact, several possibilities from which the customer can choose.

The New Competition

For example, aluminium competes with copper; plastics compete with aluminium; plastics compete with one another; laminated plastics can compete with steel and timber. And underlying this is a new and strong competitive influence—namely the possibility, or even fear, that one unit of big business will produce a new product or quality before another unit does, which fear tends to keep big business very much on its toes.

Big organisations can, of course, be rather soulless, stuffy and bureaucratic in operation. This is a constant danger—and also a constant challenge—to their higher managements. Much progress has, however, been made in overcoming these disabilities in many large organisations by decentralisation, by delegation, and, most of all, by vigorous action and clear and sympathetic thinking by top management.

So much for the disadvantages of bigness. What, if any, are the advantages? I suggest to you that the advantages are both numerous and substantial.

If all businesses had remained small, would our standards of living and the strength of our countries be as high and as great as they are today? Without bigness, what would the modern motor car be like, and what would it cost? Would we have radio and television as universally available as they are today? Would farming equipment be as good as it is? Would we have readily available, and relatively cheap, synthetic rubber, synthetic vitamins, penicillin, synthetic anti-malarials, synthetic fibres, the newer plastics, and would, too, the products of the oil industry be so universally available? I think not.

As I said earlier, I believe that healthy industry is essential

if a country is to grow and the standard of living of its people to rise. Healthy and progressive industry calls for good research, good technological development of the research results, and good commercial exploitation of the resulting products—and I do not use the word “exploitation” in the same sense as do the detractors of big business. If any one of this trinity of requirements is missing, then industry is not really healthy and it certainly cannot be progressive.

Furthermore, the good industrial organisation must be staffed by people filled with a divine discontent, for ever asking themselves the twin questions: What are we trying to do? Is this the best way of doing it?

With these requirements for a healthy industry in mind, and weighing the advantages and disadvantages of bigness, I conclude that the balance lies in favour of bigness—especially for those sections of manufacturing industry making basic materials. Bigness is perhaps not so important in parts of the consumer goods trades, and certainly bigness should not exclude smallness. The small company can, in its own right, make important contributions to economic growth, certainly if it specialises and, at the very least, it can, by preventing big business from becoming pompous and stuffy, be a most useful stimulus to big business.

We must recognise, however, that man is basically selfish, lazy and open to temptation, and that there is always the possibility of bad social behaviour by big business. I say “possibility” in order

to be fair, but I rate the probability low because industrialists and businessmen have moved a long way from the “bad old days” when bigness and monopoly gained such ill repute.

We must accept, therefore, the necessity for some national supervisory machinery, but I feel that the objective of this machinery should be to investigate and that it should be permissive in intention and not instinctively prohibitive like the, for example, Sherman Law. Its motto should *not* be “let’s look at what industry is doing and then tell them not to do it.” The test of any action should be: “Is it or is it not in the public interest?”

If as the result of investigation any particular big business is found to be acting against the public interest, then the investigating body should have power to recommend to the Government appropriate action designed to correct the error. If, however, investigation shows the actions of any particular big business to be in the public interest, they should be allowed to continue, but always subject to further investigation from time to time.

This approach was certainly not exemplified in a recent Sherman Law Case judgment affecting my Company—and Canada—when the judge said that the Court “deemed irrelevant any enquiry into whether the arrangements between the parties actually injured the public interest or whether the public benefited thereby.” An attitude of mind which I think many will find extraordinary.

SOIL CONDITIONERS

By D. J. Halliday, Jealott’s Hill Research Station (Central Agricultural Control)

In December 1951 the Monsanto Chemical Co. hit the headlines of the world press with their announcement of the discovery of a soil conditioner which they called “Krilium.” Here is an assessment of the part which soil conditioners can be expected to play, contributed by an agricultural expert from Jealott’s Hill Research Station. He concludes that because of cost their practical usefulness may be relatively small.

MOULD fit for the production of plants is of an uniform substance, unmixed with the contraries of soft and hard, churlish and mild, moist and dry: neither is it too unctuous or too lean; but light and crumbles easily; yet is consistent enough to be wrought and kneaded. It is of such due tenacity as to retain a just degree of moisture, and neither soils the fingers, nor cleaves much to the spade, which easily enters it. Of this kind is the soil usually found under the turf of pasture-grounds, upon which cattle have been long fed and foddered. In short, that is the best mould which is blackest, cuts like butter, sticks not obstinately, breaks into small bits, smells sweet, is tempered without crusting or chopping in dry weather, or becoming poachy in wet, which shines after the plough, where flocks of crows follow the ploughman, and, as Pliny expresses it, peck at his very heels.

So wrote a Society of Gentlemen, Members of the Society for the Encouragement of Arts, Manufacturers and Commerce, in their “Complete Farmer; or a general dictionary of husbandry in all its branches,” published in London in 1767. How to obtain that perfect condition, and still more how to

maintain it, is a problem that has taxed the ingenuity of farmers and gardeners ever since Adam left Eden.

Some fourteen months ago, on 29th December, 1951, an announcement was made at the Philadelphia meeting of the American Association for the Advancement of Science which suggested that the chemical industry had at last found the answer. “Krilium,” the Monsanto Chemical Company’s new synthetic soil conditioner, made headline news throughout the world.

The *New York Times* spoke of “the beginning of a revolutionary era in agriculture in which man-made deserts may be turned into blooming gardens and green acres,” and the *Manchester Guardian* of the “Miracle of krilium . . . which will in a matter of hours rejuvenate and sustain soil barren for years or generations.” Even the *London Times* devoted six paragraphs to the subject, under the modest headline “New method of soil improvement; U.S. scientists’ claim.”

The original “Krilium” was described as the sodium salt of a hydrolysed polyacrylonitrile, a long-chain organic molecule

rather similar in structure to nylon and other synthetic yarns. For reasons which need not be discussed here the American Cyanamid Company are now selling a hydrolysed polyacrylonitrile soil conditioner under the name “Aerotil,” and the “Krilium” now on the American market is not this but a modified vinyl acetate maleic acid compound.

The sudden popularity of soil conditioners had induced many other firms to enter the field. Some have been cautious; others less scrupulous. The advertisements for their products have to be seen to be believed. At least one firm has been charged with making grossly exaggerated, false and misleading claims.

So far the British chemical industry has kept aloof. The I.C.I. Annual Report for 1951 contained this brief statement:

Work carried out in recent years at the Company’s Jealott’s Hill Research Station on the factors affecting soil structure showed that bacterial polysaccharides resulting from decomposition in the soil of crop residues are effective agents in the production and maintenance of the granular structure of soil, such structure being essential if plants are to make maximum growth and fertilizers are to be used to the best advantage. Extension of this work has shown that some synthetic chemicals have a similar effect; but their cost per acre is high, and for agricultural purposes it would at present seem better to restore overworked soils by putting them under grass leys for a period of years.

In other words, cost is the critical factor.

Before trying to value what synthetic soil conditioners may be worth to the farming and gardening community—and, incidentally, to engineers—let us think for a moment of soil. The complexity of it is overwhelming.

Essentials of Fertility

Not only is soil a mass of particles of all sizes, shapes and descriptions, ranging from pebbles and gravel to fine sand, silt and clay; not only is it filled with plant roots and other organic matter in varying states of decomposition; but it teems with innumerable living creatures which are themselves an essential part of a fertile soil.

We all know well the larger creatures, ranging from rabbits and moles down to earthworms, ants, spiders and millipedes, the effects of whose activities are more or less visible to the naked eye. Yet in number they are as nothing compared with the myriads of smaller creatures, the micro-organisms too small to be seen without the aid of a microscope.

From the purely physical aspect the *texture* of the soil may be regarded as depending on the *size* of the particles in it, a sandy soil being composed of coarse grains and a clay soil being composed of very much smaller grains. *Structure*, on the other hand, may be regarded as being dependent on the *arrangement* of the soil particles, and *stability* of structure on the nature of their surfaces and the forces holding them together. A good soil possesses what is often called a stable crumb structure; with light cultivation it readily breaks down to a fine tilth which consists neither of hard clods nor of fine dust, and this condition is not quickly destroyed by rain.

We still know very little of the forces that bind the particles

together into crumbs. Clay itself possesses certain adhesive properties. Moreover, groups of particles may become coated with natural cements of calcium carbonate or hydrated iron oxides. The farmer has learned from experience that the most stable structure is found where land had been freshly ploughed from grass. The longer it has been under grass, the more durable the structure. Tillage, compaction under pressure, and exposure to the weather gradually destroy it.

Two factors which probably play an important part are the binding action of grass roots and root hairs, and the secretion of gummy substances by the micro-organisms that feed on decaying organic matter, i.e. humus. The effect of synthetic soil conditioners is thought to be similar to that of these naturally produced cements or gums. There is more to it than this, however, for the soil particles must not only be stuck together so as to form crumbs or aggregates, but the crumbs must be of the right size and shape, stable in themselves yet still admitting water and not adhering firmly one to another. (For certain engineering purposes waterproof crumbs may be preferable.)

Importance of Soil Structure

What advantage does the farmer gain from a good and durable soil structure? Early sowing, for drainage is more rapid and the soil crumbs can hold more water without the soil as a whole becoming waterlogged. Better germination, because the surface is not hard and compacted, nor again is it so likely to become waterlogged. Better growth, because the soil gets warmer sooner, is better aerated and retains its moisture in time of drought. Quite probably, too, a better response to fertilizers.

How much is it worth? The farmer, of course, cannot afford to do without it. He obtains it at present by skilful management, by the adoption of rotations which include one, two or three years under grass, by ploughing in green manure crops and other organic matter, by using the action of frost and rain to break up heavy clods, and by keeping off the soil when it is wet. The question really is: Improvement and maintenance of structure cost the farmer (and gardener) much time and money; will chemical conditioners do the job as effectively, yet more cheaply?

In most cases the answer is undoubtedly no. Particularly on light sandy soils, on soils rich in organic matter, or on grassland, lawns or sports grounds, little benefit may be expected from soil conditioners.

Under special circumstances, where quick results are wanted, the answer may well be yes. Possible examples are in gardening on heavy soils and for establishing vegetation on steep slopes or under very wet or dry conditions, but more research is needed before a full answer can be given. There are practical difficulties in applying such a material and distributing it uniformly through the top few inches of the soil.

Then again, how long will the effect last? What effect will it have on weeds? What cultivations will be saved? Will it affect crop nutrition and the response to fertilizers? Will organic manures still be needed? And will crows still peck at the ploughman’s heels?

DENTAL TECHNICIAN

IF you are one of the many million people in Britain who wear dentures you will have a personal interest in a small department of Plastics Division at Welwyn Garden City. It is a technical service laboratory where they specialise in solving problems brought to them by dentists all over the country.

What has Plastics Division to do with dentistry? This, of course, was the first question I asked Gordon Mercer, one of the dental technicians in the laboratory. By way of reply he showed me two bottles. One contained a fine pink powder, the other a whitish powder.

"These are both polymethyl methacrylate," he said. "They're used for making dentures: the pink for plates and the white for teeth."

Chemically there is no difference between these powders and an aircraft's cockpit canopy. It would never do, though, to have transparent teeth, so the methyl methacrylate has white pigment added to it and is sold to the dental profession as 'Kallodentine.' For the plate of the denture the methacrylate is usually coloured to match the gums, though some patients prefer a transparent plate. The powder for the plate is called 'Kallodent.'

Before the war most dentures had porcelain teeth and were made of vulcanised rubber. Soon after war began both porcelain teeth and rubber became scarce; acrylic dentures, which had been developed at Billingham in the early 1930's, at once came into their own. Dental technicians had to learn a new technique, and it was the job of Gordon and his colleagues to teach them.

As Gordon pointed out, making dentures has always been a real craft, and now it is one of the very few crafts in which plastic is used as a medium. He offered to show me how a tooth is made from 'Kallodentine.' First he took a measured quantity of the powder and added to it a measured quantity of liquid from another bottle. This, he explained, was the same plastic in liquid form, and in a few minutes it would turn the powder into an easily workable dough.

The mould for the tooth is made from plaster of Paris. It is in halves, each containing the impression of half the tooth. (A real tooth can be used to make the impression, or you can carve a model, Gordon told me.) When the mould is filled and the halves are fastened together the doughy plastic fills every crevice of the pattern.

The 'Kallodentine' would not harden sufficiently of its own accord. It has to be polymerised—in this instance a simple

enough process, the mould being put in water and boiled for a few minutes. At the end of that time it is taken out, cooled and opened, to reveal a tooth that only needs polishing before it goes into service.

The tooth that Gordon had made was perfect in colour and shape: very pretty, but not, as he pointed out, much like a tooth that had put in a number of years' work. Natural teeth often have a biting edge that is slightly transparent, faults in the enamel and, perhaps, blemishes such as tobacco stains. Unless the denture is a complete one it is no good making artificial teeth as pearly and regular as those in a toothpaste advertisement. They must be in character with the patient's remaining natural teeth.

This calls for a rather special skill. To give the tooth the proper translucent edge there is a shade of 'Kallodentine' that is almost transparent. Some of this powder is applied to the tooth before it is hardened. At this stage, too, any of a number of special coloured powders may be applied to imitate tobacco stains, the white marks that many people have on their teeth, or other blemishes.

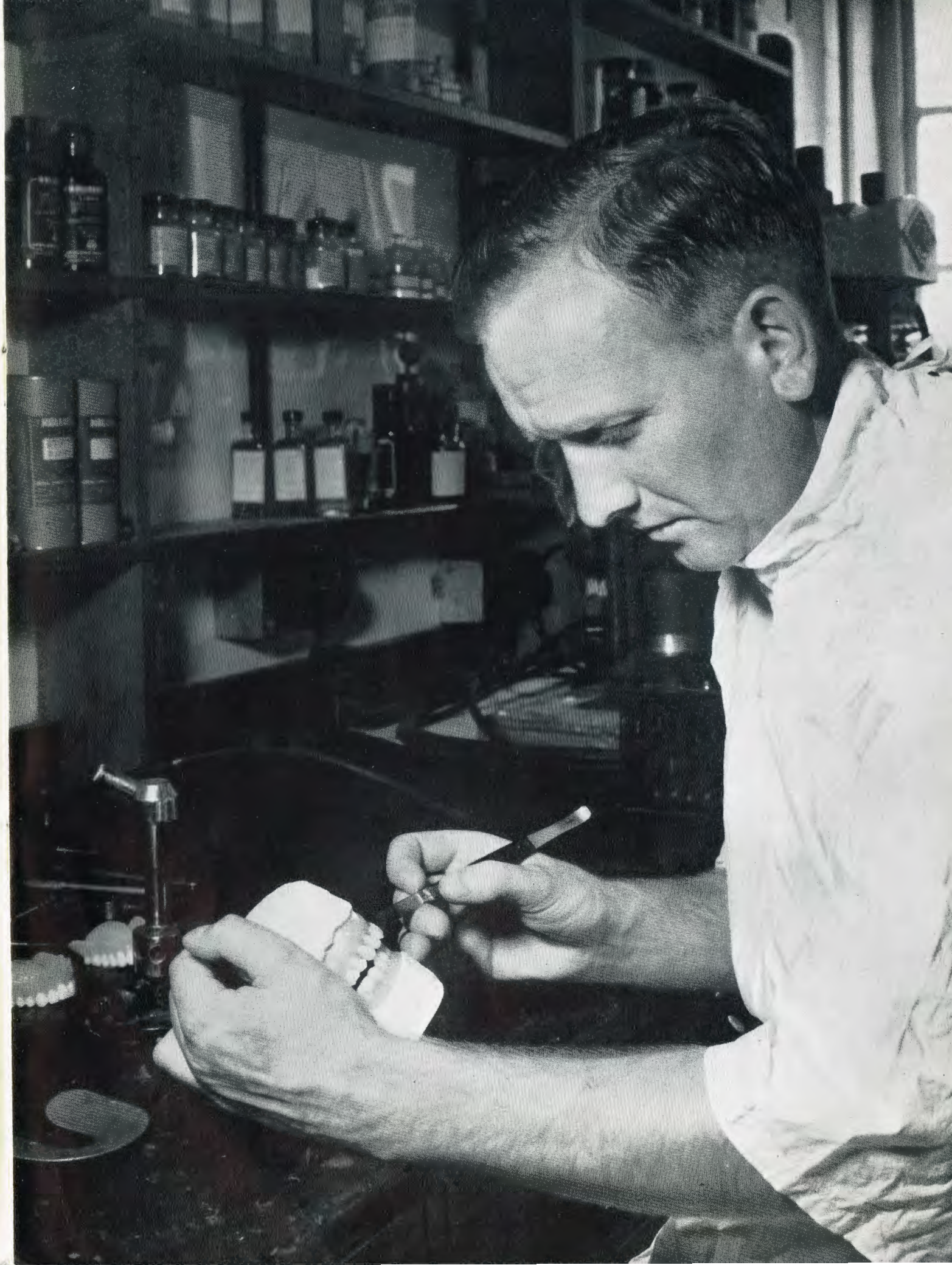
But the teeth are only half the battle. They are useless with an ill-fitting plate, and Gordon demonstrated to me what careful attention to detail is needed at this stage. When the dental technician receives the plaster mould of the patient's mouth he uses it to make a wax denture, and in this the 'Kallodentine' teeth are set. Now he must carve and pare the wax—contouring, Gordon called it—around the base of the teeth to produce a perfectly natural-seeming gum. If this is carefully done it may be the longest operation of all.

All that is left to do now is to make a plaster mould from this wax denture and pack 'Kallodent' dough into it. When this has been hardened the denture is complete except for polishing.

Alongside a row of dentures on a shelf in this laboratory I saw some elaborate surgical splints. Gordon told me that as well as dealing with the day-to-day problems of dentists they do a great deal of work in the department on the use of plastics in surgery. He and his colleagues have taken part in the development of plastic eyes (now used almost universally in place of glass ones) and are continually working on special 'Alkathene' and 'Perspex' appliances for sufferers from diseases of the spine, polio and broken necks, to give a few examples. Apart from all its other advantages, plastic can make almost an ornament of a splint that would be clumsy, heavy and disfiguring if it were made of plaster.

M.J.D.

Gordon Mercer



TOMATO GROWING

By N. P. Harvey (Plant Protection)

No plant gives a greater bulk of nourishing food than the tomato, and none responds more to care. It is worth a place in every garden—if you like the taste.

Here a grower gives practical advice, with emphasis on the outdoor tomato.

WHAT is the truth of the matter? The amateur can definitely grow good tomatoes outdoors, yields depending on locality and weather. Areas with a fairly low rainfall and plenty of summer sunshine are ideal. In cold, wet districts three trusses probably constitute the maximum, but a further truss can often be ripened in the south.

The best site is alongside a sunny wall or fence. East or north walls are unsuitable, as the majority of fruits will never ripen. A south border is also excellent. Tomatoes can be grown quite successfully in rows across an allotment, but avoid planting too near potatoes, which belong to the same botanical order, and may therefore transmit the dreaded blight disease. A row of runner beans furnishes a useful windbreak. Never plant in even partial shade.

Tomatoes are happy on most soils, providing the land is in good heart. Elaborate soil preparation is unnecessary. Heavy dressings of fresh farmyard manure are inadvisable, as they encourage soft growth, delay ripening and may cause the fruits to split. If the ground is poor, a light dressing of *well-rotted* manure may be thoroughly mixed with the soil. Assuming the land is really fertile, simply add a little sulphate of potash, which will assist ripening and also improve colour and sweetness.

Always buy your plants from a reliable source. Pot-grown seedlings are preferable to tomatoes raised in boxes, as they usually make better plants in the end. A well-grown plant will be short and stocky with fairly dark foliage. Avoid tall, lanky seedlings and make sure that the plants are specially hardened for outdoor cultivation.

Late spring frosts are always possible, and it is best to defer planting until the first week of June. In the south or south-west late May is usually safe. If frost seems likely once you have planted, cover the seedlings with pots, paper or straw.

Before any planting is attempted, water the ground

thoroughly. Moderately firm planting is desirable—there is no need to stamp the ground as one does with rose trees. The soil should come about two inches higher up the stem than in the pot or box where the seedlings were originally grown. This encourages surface roots to grow from the base of the stem. Allow fifteen to eighteen inches between individual plants and about three feet between rows.

Staking is most important. Avoid tying the stake too tightly, as a tomato stem increases in girth very rapidly.

All side shoots should be pinched out or cut immediately they appear. This will be necessary throughout the season, as tomatoes make very rapid growth. The growing point must also be cut away with a sharp knife after three trusses have formed. In the north two are sometimes sufficient, whereas in the south and south-west four trusses will often ripen. Green fruit can be used for making chutney and pickles, or it may be ripened indoors.

A wet summer usually means a mediocre tomato crop, fruits being small and slow to ripen. On the other hand, prolonged drought causes the skins to harden and subsequent heavy rain or excessive watering results in splitting of the fruits. It is virtually impossible to give precise directions regarding watering, but a thorough soaking during a really dry period is better than little and often. Sinking a flower pot into the soil and filling with water is a popular and effective method. A permanent mulch of grass cuttings, compost, hop manure or peat moss litter helps to conserve moisture.

When the bottom truss is swelling and the biggest fruit is about the size of a walnut, start feeding at fortnightly intervals with a complete fertilizer such as 'Abol' Double Strength (this is simply I.C.I. No. 1 in small packs).

Sometimes the bottom truss fails to set (hot days and warm, dewy nights favour rapid setting). To avoid this a special fruit-setting hormone spray may be applied when the last fully formed flower on the truss is in blossom. This supplements



Tomatoes in full bearing at Fernhurst Research Station, where 90 tons to the acre—a world record—have been grown



Pinch out side-shoots as they appear



With outdoor tomatoes stop growth of leader after fourth truss

natural pollination, ensuring uniformity in size, weight and ripening.

Removal of a few leaves to allow a free circulation of air is a common practice. This must not be overdone or the plant will be weakened. Contrary to popular belief, temperature rather than direct sunlight ripens tomato fruits, hence cutting away foliage merely to let in the sun is unnecessary.

Fully ripe tomatoes should be picked at once, otherwise the ripening of the remaining fruits will be delayed. Green or partly ripened fruits ripen properly indoors, with the following provisos. Never store tomatoes which are in the slightest degree bruised or decayed, and make certain that they are quite dry (the calyx in particular must be absolutely free from moisture and, of course, left on the fruit). The correct way to pick tomatoes is to turn back the fruit and break the stalk at the joint just below the calyx.

Tomatoes ripened on window-ledges or greenhouse shelves must be kept away from the glass or they may develop tomato scald, a disorder denoted by a white, wrinkled patch on the fruit. Arrange the fruits in single layers on trays or

box lids, separating the rows by strips of newspaper. The fruits must not touch one another. Place the trays or lids in a drawer, cupboard or other place where the temperature does not drop below 50° F. at night (52–54° is about right).

Storing tomatoes in peat or sawdust cannot be recommended, as peat is difficult to keep at the right temperature and sawdust may give an unpleasant taste.

There are many good varieties for outside cultivation. Your nearest nurseryman or seedsman will recommend those varieties that have proved successful locally. Remember that individual varieties do not necessarily combine early ripening with heavy yields. In the north it may be advisable to concentrate on an early variety such as Earliest of All, Harbinger or

Histon Early rather than a heavy cropper such as Stonor's Exhibition or Stonor's Moneymaker.

The dwarf and bush tomatoes are popular with many amateurs, though the bush varieties such as Stonor's Dwarf Gem require sticks for support and a mulch of straw to raise up the fruits from the ground. The Amateur, from W. J. Unwin of sweet pea and gladiolus fame, is claimed to be at least two weeks earlier than any other variety. The plant is compact, does not exceed one foot in height and requires no staking or pinching out of side shoots. Litter or straw should be placed underneath the plants, as with strawberries. The effect when looking down on the plant and fruits has been compared to a clutch of eggs in a nest.

The most common disease among outdoor tomatoes is tomato blight, which flourishes in warm, wet weather. Symptoms are usually first evident in the south-west and consist of dark brown or black blotches on foliage, stems and fruit. Preventive spraying with a copper fungicide will arrest the spread of the disease, which also occurs on potatoes. Look out for signs of infection from late June onwards, especially during rainy periods.

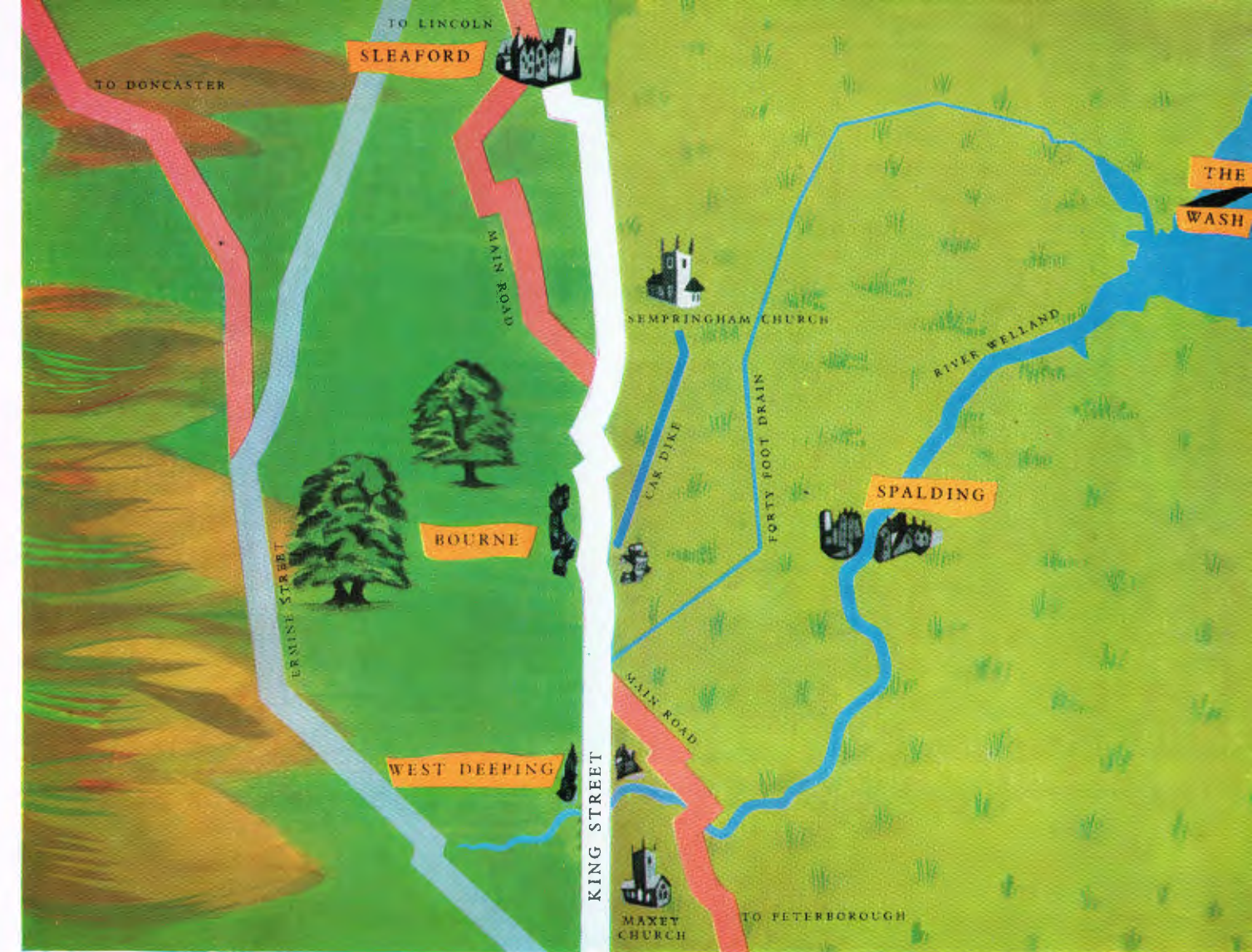
Tomatoes produce good crops in cold frames. Lettuces and radishes sown from January to March can be removed before planting the tomatoes, which may be followed by autumn-sown cauliflowers. When grown throughout the season under cloches, tomatoes often ripen a month earlier than usual.

Danger of Leaf Mould

If you have a cold greenhouse, never plant out seedlings till late April or early May. Tomatoes may be grown either in twelve-inch pots, in boxes on staging, or in prepared beds, allowing about eighteen inches between individual plants. Old orange boxes are excellent. Prepare the soil by incorporating sulphate of potash as with outdoor tomatoes, adding some good fibrous loam and a little bonemeal. Alternatively the John Innes Potting Compost, which can be bought from many seedmen, mixed for immediate use, may be employed. Leave one stem to each plant and remove all side shoots. With really good cultivation six or seven trusses should ripen satisfactorily, but there is no need to stop the plants except to restrict growth to the limits of the greenhouse.

Tomato leaf mould can ruin an entire tomato crop under glass, as it spreads like wildfire. Symptoms are usually first apparent on the lower leaves. Pale yellow patches are found on the upper surface and greyish-brown patches on the under side. It is caused by excessive humidity combined with dry conditions at the roots. To combat leaf mould pay careful attention to ventilation, not merely at the top of the greenhouse but also at the ends and sides. Spraying with 'Tulisan,' a product of the Dyestuffs Division, based on tetramethyl thiuram disulphide, is an excellent preventive measure.

There is no space left to deal with tomatoes in a heated greenhouse (at Fernhurst yields exceeding ninety tons to the acre have been recorded). May I therefore finish on a personal note. Though I grow tomatoes at home, this is entirely due to pressure by the family, as the taste of the flesh leaves me absolutely cold. I like the skins and I can appreciate tomato soup, but that is all!



DOWN OUR STREET

By L. H. Manning (Midland Region)

Our street is King Street, Lincolnshire—a Roman road which runs along the edge of the Fen. Here is the story of what that road has seen and of the struggle beside it of farmers down the centuries—in prosperity and in poverty. It is the story of agricultural England in miniature.

KING STREET, Lincolnshire, is a Roman road. Not one of those great military highways that stride so directly across the country with such disdainful precision; it has no great pretence, but it is part of history and the Romans built it.

King Street enters Lincolnshire from Lolham Bridges, a row of haphazard arches and causeways that lead it over the Welland and its flood meadows to West Deeping. Down the village street, the only village on its track, it heads north with Roman directness to Lincoln City. Straight, in the traditional Roman fashion, it manages by some magic to follow the line where the low oolite ridge sinks into the fen and marks the

eastern limit of assured dry-shod passage. Defence could hardly be its prime purpose, for just to the west are Ermine Street and the Fosse Way, with camps and posting stations dotted along their length. King Street can show the traces of a few villas, and perhaps more await the archaeologists' spade, but the tramp of legion and the clash of bronze armour do not fit here.

To the east, never much over a mile away on its whole length, is another work of the Roman engineer, the Carr Dike. For more than fifty miles, following the low contour trailing along the edge of the fen, this canal intercepted the upland waters and conducted them into the Witham in the north or



FEN COUNTRY, BLACK AND FERTILE

the Nene in the south. Excepting for a few short stretches it still does so as part of the intricate system of drainage protecting the fens today.

Road and dike, tracing the same course along the junction of fen and upland from Peterborough on the Nene to Lincoln on the Witham, are more than neighbours; they have other association. As drainage canals are used in Holland today as highways of transport, so must the Carr Dike have served in its time carrying grain and produce. King Street was built to link up the canal with the main highways of the land and is earthy rather than military, keeping that flavour down the ages with its queer blend of directness and hesitancy in its course.

Today the road dog-legs and deviates enough to turn a Roman engineer in his grave, yet it does not stray far from its course laid down so long ago.

It passes through two towns, fording a river at each, but after leaving West Deeping it goes through no village, though there are more than a dozen along its course. These all lie to the east and not more than a furlong from the road. Each is on a stream or beck which often enough flows down the centre of the village street; each seems to have a seclusion or retirement of its own choosing. This seclusion is Saxon; arriving by longship thrusting up the creeks or streams to the limit where the tribes made camp before raiding.

Then came the Danish raids, which left little mark on the landscapes apart from some village names, and after that the Norman invasion. The Norman-built castle and church keep their memory. The castles were pawns of power and as pawns were often destroyed, leaving the mounds on which they were built. But the churches remain, and from the tithe which sustained them can be deduced the wealth that flowed around and along King Street.

Each of the villages along the road had its church; several had two—one for the rector and one for the vicar. Monastic houses were there too, and the adventuring of the Romans was

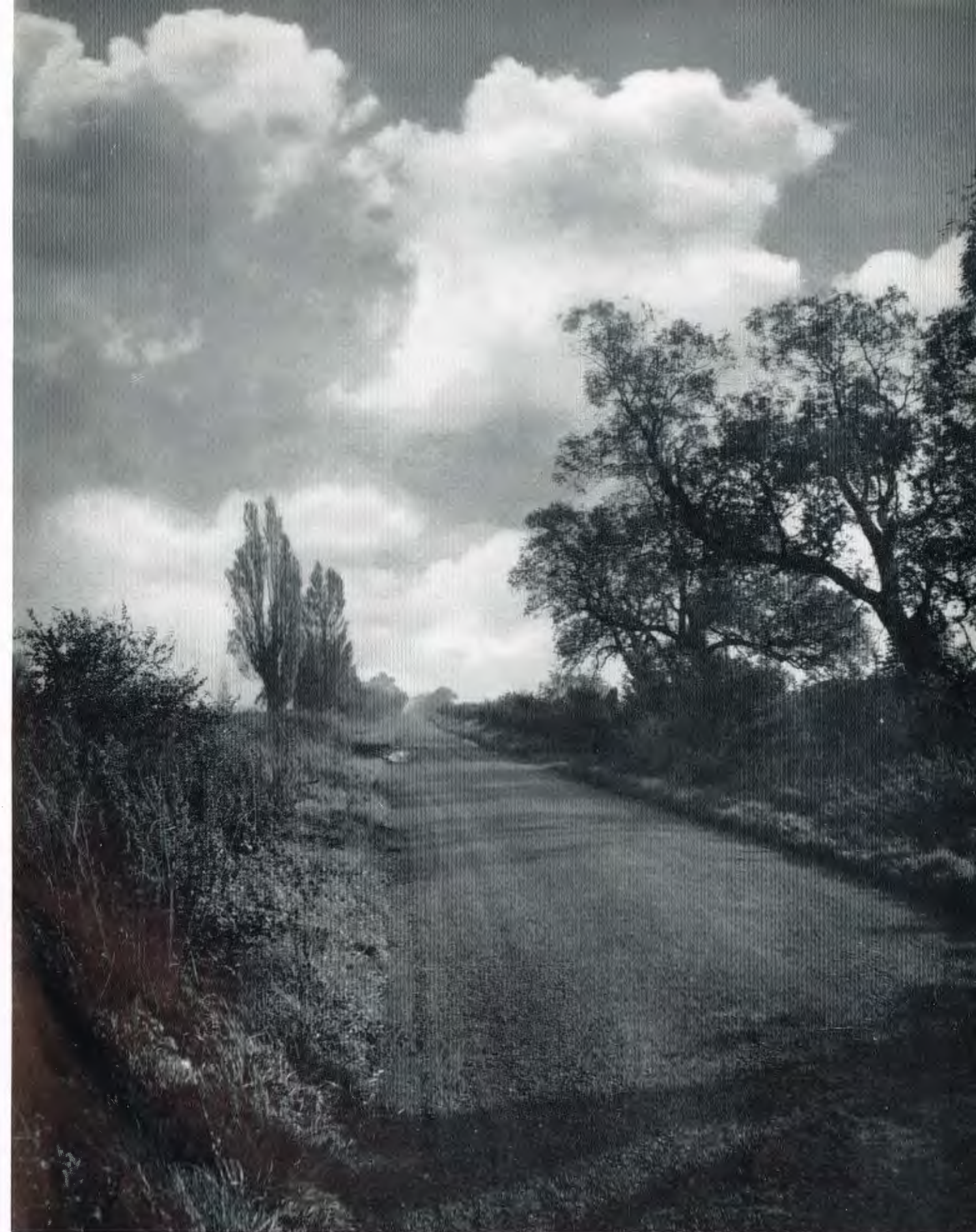
repeated, the water driven back and the rich soil tilled in a most husbandlike manner. Roads to Lincoln, a great episcopal centre, flourished, drawing wealth from tithe and benefice, rent and tax, until the Black Death, the Wars of the Roses and Henry VIII dimmed the prospect.

Later the flow of trade along the road changed from its eastern side to the west. Wool became king, and oolite uplands, from Stamford and Peterborough to Lincoln and beyond, pastured sheep—Lincoln sheep noted for wool of fine staple. Bale-laden packhorses plodded to the staple towns of Lincoln, Stamford, Boston and Kings Lynn without a deal of thought for the foresight of Roman engineers who had laid the course of King Street. The oolite heath grew the wool; the Church took her tithe and enlarged the village churches along the road with stone from the heath quarries. The fen was neglected but bided its time.

In the first Charles's day war flowed along and around King Street, but soon news of Sir Cornelius Vermuyden and his Dutchmen followed, so the fen was stirred from sleep by a bold attack on the water. Roman canals and sea walls were made part of a wider scheme and stirred conflict again between those natural enemies—farmer and wildfowler—a fight which has ranged over the centuries until today there is nothing left for the latter but the salt marsh fringing the seashore, and reclamation nibbles at that.

The struggle is marked by the many holdings named "Decoy Farm" which dot the map. The fen, freed from water, was ripe for the introduction of turnip, mangold and clover, adding the bullock to corn as the wealth from the land. But not wool or corn or beef mark the next phase of the history of King Street. The industrial revolution brought no smoke to foul the air, but it brought its wealth.

Red-faced Georgian squires set the fashion in the chase of fox, partridge and hare, and to be a squire was the ambition of the successful industrialist. A sporting estate in Lincolnshire



KING STREET—STRAIGHT, AS THE ROMANS MADE IT



SEMPRINGHAM CHURCH, Norman-built and once the centre of a village community whose prosperity was wool, but now an isolated landmark amid acres of flat farmland



THE RIVER GLEN which carries the water from the Fenland. Centuries of cultivation have lowered the level of the Fen some 20 ft. below these main dikes, which are now fed by pumps.

was to him a very desirable acquisition, and a new era was on. Miles of park wall were built and the gamekeeper lorded it in village society.

Until this time Lincoln Heath was a vast area of scrub and sheep-walk so infested with footpads and highwaymen that one thankful traveller erected a lighthouse—a beacon on a stone tower—to guide other travellers safely across its open waste. Now the scrub was swept away, stone walls built and the soil brought under the sway of the Norfolk four-course rotation to bring, in competition with the fen, old in its fertility, the shaven, well-brushed air of ordered prosperity along the road. Rules of good husbandry and law of rotation, with due respect to the preservation of game, raised the pitch of farm production to a crest, a level thrown into focus by the trough which followed.

In the 1920's high taxation, the cry of cheap food and still cheaper food, death duties and the consequent leeching of fertility brought King Street to as shaggy a state of unkemptness as ever before. All the decline of squired estate, all the skimping of cultivation, the tumbling of stone wall and the fouling of ditch and drain, the change from plough to uncared-for grass, might be less dramatic than the birth of a dust bowl, but they are all children of the chase for cheap food. Along King Street, however, they seem more real and more prophetic of the thin lifeline on which fifty million folk depend.

But as wave is followed by trough, wave follows again in turn, and a new phase opened when William Parker bought the Londesborough estate in 1937—over 20,000 acres of it typical King Street country—heathland, skirtland and fen lying astride the road, taking in its share of the villages. A bold purchase, for estate ownership and traditional farming were not faring well and had dragged the condition of the land down with them in the course of events.

The method of tackling the job looks all too simple now and obscures the long-headed appreciation and foresight of the

pioneers who avoided the approach of the peasant and adopted that of a field-marshal with a battle to fight. The chemist was brought in to assess the needs of the soil, the world combed for machinery ideas big and sweeping enough to bring production per man-hour to an economic figure, business minds directed to market produce and buying requirements, roads laid to serve needs—a whole organisation cutting across tradition to meet the demand for cheap food where the old had failed.

It did not bring back any of the old shaven and pampered tidiness of Edwardian days to King Street, and this tends to obscure the efficiency and economy of machine farming, just as the ordered and groomed appearance of the old estate home farm misled in its impression of settled prosperity.

Now tractor is king, farming is a business, and land is served by machines, chemists, entomologists and accountants, and operations are directed by telephone and Land Rover.

Foreign and strange odours taint the air, from diesel fuel to MCPA; files of combine harvesters, like red-painted brontosaurus, plod in ever-decreasing circles round the standing corn. Five or six furrowed ploughs change the colour of fields over-day rather than overnight, though that too is possible with glaring headlight. Prairies of grain, wheat and barley, potatoes—king of cash crops—and flats of beet for sugar are all interspersed among odd fields of garden stuff, sprouts, greens and carrots. Weird crops like opium poppy and sunflower, by the forty or fifty acre, are there to startle the eye. Revolution of practice, of thought and approach, development of machine, bold calculated use of fertilizer, weedkiller and insecticide.

These may have startled King Street and its memories; but these ideas, incubated like any bacterium by the fever of war, have seeped through much of England's farming. Just as a disease has a primary entrance to the body, a seat of infection, so has King Street a place in the history of the land; just forty-odd miles of road, King Street, Lincolnshire.

ICI NEWS

DONATIONS TO FLOOD DISASTER FUNDS

I.C.I. has contributed a sum of £10,000 to the National Flood and Tempest Distress Fund in Britain, and £1000 to the Dutch National Disaster Fund. I.C.I. (Holland) (see page 91) has contributed the equivalent of £941 to the Dutch fund.

Head Office and many of the Divisions also set up centres last month for the reception of money, clothing and other comforts for the flood victims in Britain.

PENICILLIN FIRMS ENDOW OXFORD FELLOWSHIP

The four British manufacturers of penicillin—I.C.I., Boots Pure Drug Company, The Distillers Company, and Glaxo Laboratories—have endowed a £14,000 medical research fellowship at the Oxford women's college of Lady Margaret Hall. It is to be known as the Florey Trust and commemorates the discovery of the chemotherapeutic action of penicillin and its introduction into medicine through the work done at Oxford by Sir Howard Florey and the team of scientists working with him.

By the terms of the endowment the fellow is to conduct research in some science related to medicine, with a preference for pathology and bacteriology. The first holder is Mrs. Margaret A. Jennings, one of Sir Howard Florey's team and a member of the college.

MR. WORBOYS CHAIRMAN OF COUNCIL OF INDUSTRIAL DESIGN

Mr. W. J. Worboys, Commercial Director of I.C.I., has been appointed by the President of the Board of Trade to be chairman of the Council of Industrial Design. The appointment—an honorary one—lasts for a term of three years.

Mr. Worboys has been a member of the Council since 1947. One of his first engagements as chairman was on 6th February, when he addressed a meeting of industrialists in Glasgow arranged by the Scottish committee of the Council.

"There are still some people," Mr. Worboys said, "who think that good industrial design is a 'long-haired' business and at best treat it as an afterthought in the industrial chain rather than as a fundamental plank of industrial policy." The design department must be an active and integral part of the industrial team; its thinking and action must influence the other members of the team, and itself be influenced by the thinking and action of the other members of the team. "Design," said Mr. Worboys, "is an essential tool, which the industry of Britain must use if it is to maintain, let alone increase, its export trade."

"Good design is an essential element in quality, and in these days, when higher productivity is so much sought after, the importance of quality is often insufficiently emphasised."

HEAD OFFICE

A Promising Footballer

Football fans in the Liverpool office of Shipping Department hope that in the not-too-distant future they may see their favourite player selected to play for England.

He is Mr. Laurie Hunt, a member of the Shipping Department staff. Recently he was selected by the Football Association to represent the Football Amateur Association XI (Western Section) against the Northern Nomads. He has also been nominated to play for Liverpool County Association against Lancashire.

Mr. Hunt normally plays for Marine (Crosby), which is the only amateur club in the Lancashire combination. He is a forceful and versatile player who is equally at home in either of the full-back positions.



Mr. Laurie Hunt

ALKALI DIVISION

Silvertown Workers in the Floods

By a fluke which no one can explain, Silvertown Works, with its 350-foot frontage on the river Thames in the Royal Docks area, was left untouched by the disastrous floods which swept the East Coast, the Thames estuary and Thames-side at the beginning of February. But many of the Silvertown workers were not so lucky. Living in the nearby Keir Hardie estate, they woke in the early hours of the morning of 1st February to the sound of policemen beating on their doors and loudspeakers announcing a flood warning. By that time it was too late, most of them say, to do much except nip hastily upstairs through the encroaching water.

Those who lived in flats sought shelter with their neighbours upstairs, but for an unfortunate few who are still living in Nissen huts after being bombed out during the war there was no upstairs. Mr. V. Hunt, a loader in Silvertown warehouse, was one of these. At 2 a.m., with his wife and two children of 4 and 5 years, he fled at ten minutes' notice to friends in an upper-floor flat nearby. He expected it would be at least two weeks before his home was habitable again.



Mr. V. Hunt

Mrs. M. Toye

down a switch on a radio set and hear him tell Ludwig Mond to go along to the siding down by the kilns and lend a hand with some wagons that need moving. In a cheerful voice Ludwig Mond will answer "O.K.!"—and that is that.

Kelvin, Crookes and Ludwig Mond are the three locos at Lostock which have been fitted with two-way short-wave radio—and this radio is paying dividends.

There is a pleasantly informal air about some of the conversations one hears between Crescent Base and the three locos, but there is something very businesslike about the way Kelvin, Crookes and Ludwig Mond go steaming off on a new job—and a lot of time is being saved.



"Ludwig Mond calling Crescent Base . . ." R/T in use at Lostock

When a request for transport came through in the old days the controller often had to leave his desk and go chasing after the locos, and he must have been a very tired man at the end of a shift. But today the request comes over the phone and in a matter of seconds Control is talking to the loco driver, and the service is almost immediate.

Mr. George Robinson, the manager in charge of transport, is enthusiastic about this radio link. "In the past," he says, "the problem of contacting the locos wasted an awful lot of time, but the controller is now in immediate touch with the locos and can divert the one nearest to the point where it is needed."

On 28th July last year the first loco was fitted with radio and Crescent Base went on the air for the first time. The same day the South Sidings were brought into operation.

British Railways use these sidings to deliver limestone, coke and boiler fuel to the works, and the sidings are also used by Wade Works of the General Chemicals Division. With three different groups using the same tracks, things might easily develop into something of a shambles. But the introduction of radio control has helped to keep everything moving smoothly.

When British Railways ask for permission to bring in a train of raw materials it is a simple matter for Crescent Base to move its own locos out of the area until the all-clear is given. Radio control also plays its part in safety—particularly in fog. Each loco can hear every message that is sent, and even in the thickest fog the driver of Crookes knows exactly where Ludwig Mond is—and vice versa—and it is easy for Control to arrange for one loco to have a clear run from one end of the works to the other. The word "Crescent" in the call-sign "Crescent



Miss D. Stasulevich

Miss L. Horton

A watchman at the works, Mr. A. Bristow, spent 23 hours baling out water from his home in the Keir Hardie estate. His cheerfulness was typical of the way in which the flooded Silvertown workers took their misfortune. All of them had been bombed out during the war (West Ham was one of London's worst-bombed boroughs), and their concern was chiefly for those who had fared worse. "It takes more than a bomb or two feet of water to shake a West Ham family," said the works manager.

Ludwig Mond Speaks Again

Any day at Lostock Works you can hear Ludwig Mond speaking. Quite clearly. If you happen to be standing on the weighbridge there, talking to the man in charge, Mr. Arthur Towers, you will more than likely be interrupted by a voice at your shoulder announcing "Ludwig Mond calling Crescent Base." But if you turn round, half expecting to see a bearded figure standing there, you will see instead Mr. Towers pushing

Base" is a link with the Brunner Mond days, as are the names of the locos themselves.

Lostock Works was the first, and is still the only, works within I.C.I. which uses radio to control its locos. No wonder Kelvin, Crookes and Ludwig Mond look just a little superior as they bustle around the works.

BILLINGHAM DIVISION

Sassenach Piper

When the Tees-side Caledonian Society held their Burns Night dinner in Stockton in January one of the pipe tunes they heard was a new march composed by the society's piper, Mr. Harry Fores, who is a draughtsman in the Oil Design Section of Chief Engineer's Department. Mr. Fores' march has been accepted as the Society's official tune.

Although not a Scot—he is a native of the West Riding of Yorkshire—Mr. Fores has been interested in piping and pipe music for many years and began learning to play in 1936.

He began taking lessons from a Scottish pipe-major after moving to Sheffield the following year, and on returning later to Stockton he continued his training under a former Army pipe-major who had served with the Argyll Highlanders.

Wearing the full dress of a Highland piper he has played at a number of functions held by the Caledonian Society and, as one of the few pipers in the Stockton district, has also played at other local events.

In addition to piping—he has played the Irish pipes and would like to learn to play the Northumbrian type—Mr. Fores is interested in the Gaelic language and has been studying it for almost as long as he has been piping.

He recently began studying Irish, which is similar in many ways to the Gaelic spoken in the Scottish Highlands and the Western Isles, and is a regular listener to the Irish lessons broadcast by Radio Eireann.

DYESTUFFS DIVISION

Labour Officer Retires

Miss C. J. Denston, Commercial Manager and Labour Officer at Spondon Works, who retired in January after more than 35 years' service with the Company, held a unique position for a woman in a works whose complement is predominantly male.



Miss C. J. Denston

Miss Denston was appointed to this joint post in 1936 shortly after the firm of Leech-Neal & Co. Ltd., manufacturers of inorganic pigments, had been taken over by I.C.I. to become the Spondon Works of Dyestuffs Division.

Leech-Neal & Co. Ltd. were an old-established firm whose beginnings go back to 1864, when Mr. Charles Leech and Mr. Thomas Neal started independent businesses for the manufacture of paints and colour in Derby. Miss Denston joined them during the first world war and was made secretary to the company in 1933. It was a small but go-ahead concern which not only had its own sick club and holidays with pay but also

a workers' pension scheme. Miss Denston's wide knowledge and experience of such welfare matters stood her in good stead when the change-over to I.C.I.'s schemes took place.

By virtue of her position Miss Denston has attended frequently at Division and Central Councils and has become well known not only throughout the Division but to some extent within I.C.I. as a whole. The occasion of her retirement was marked by several presentations from her friends and well-wishers, and with them we hope Miss Denston will have many years in which to enjoy her new-found leisure.

Prizewinning Probationer

Miss Audrey Sweetmore, a clerk in Secretary's Department at Hexagon House, headquarters of Dyestuffs Division, one of 83 girls training under the 1952 Probationer Course, received an engraved fountain pen from Mr. H. Jackson (joint managing director) in the Board Room on 27th January for submitting the



Miss Audrey Sweetmore receives an engraved fountain pen from Mr. Jackson. Miss M. Kay, assistant staff officer for women, looks on.

best general knowledge paper at the end of a series of sixteen lectures. The runners-up were Miss Greta Wells (laboratory assistant), Miss Jean Parker (typist), Miss Joan Kelly (clerk) and Miss Anne Hempsall (laboratory assistant).

The Probationer Course, which is additional to normal vocational training, is arranged by Division Staff Department and consists of a general course of instruction on the Company and its activities, put over by means of lectures from senior officials, a brains trust, films, and visits to laboratories, offices and a works.

All the probationers, who were between 16 and 18 years of age, started their training with the Division last September, and they included clerks, laboratory assistants, shorthand typists, two tracers and two calculating-machine operators.

METALS DIVISION

Mr. N. W. Tilt

For forty years a familiar figure at Kynoch Works, Mr. N. W. Tilt retired from the Company's service at the end of 1952.

Mr. Tilt's first six years at Witton were spent in the Fitting Shop, and last two as supervisor of the Costing and



Mr. N. W. Tilt

and in 1944 moved into its last phase with an appointment as Labour Adviser to the Division board.

In the words of the Division chairman, "In his work the qualities which marked Mr. Tilt out particularly were his conscientious application to his job, the generous use he made of his long experience to help others, and the quiet courage, confidence and kindness he displayed in his contacts with employees at all levels."

They also Serve

Mr. Stewart Allen, seen on the extreme right of the illustration below, has a history of 26 years' service with Fyffe & Co. Ltd. of Dundee. But that is only part of a family record of service which is outstanding, if not unique.



Boys Brigade veteran Mr. S. Allen (right), with his brother, sister and nine nephews and nieces

For nearly 25 years Mr. Allen has been commander of the Dundee 29th Boys Brigade Company; his father was the first cadet to join the 9th Company of the Brigade sixty years ago; his brother, sister and nine nephews and nieces are now members of the Boys Brigade, the Life Boys (its junior branch) or the Girls Guild (its sister organisation). All the children joined their respective companies at the minimum age of 9, and in all the Allen family has contributed 95 years' service to the organisation.

Two of the boys hold special awards—Allen Grant the highest in the company, Alex Marshall the highest in the Brigade (the Queen's prize).

NOBEL DIVISION

"Great Chieftain o' the Puddin' Race . . ."



The picture above shows a scene at the third annual Burns Supper of the Nobel Glasgow Club: Dr. J. S. Flanders giving a rich rendering of the "Address to a Haggis."

There was a time when the Burns Supper was a mystery understood by men only. That illogical way of complimenting a poet who never lacked gallantry to ladies in his verse is changed. Nowadays ladies attend Burns suppers and enjoy them.

Indeed, at some celebrations no men are present, so far has the pendulum of fashion swung. The Nobel Glasgow Club, however, favours the happy mean. On this occasion women and men accounted almost equally for the total of 300 people who met in the staff restaurant of the Sauchiehall Street office.

After Dr. Jenkins had said the Burnsian Grace the supper began, and when a few minutes had passed the audience heard a sprightly tune on the pipes and sprang to attention as Pipe Major Macdonald played in the haggis, which was carried respectfully by Chef Robert Barr to a point on the main table where Dr. Flanders stood and toyed with a sharply glittering knife.

Champion Again

After a year's absence from the competition Mr. N. T. Byars of Ardeer Recreation Club Draughts Section is once again the Ayrshire Individual Champion. On 10th January, in a final which gave an enlightening afternoon for draughts enthusiasts in Ardeer Recreation Club, he defeated his club-mate Mr. James Lewis. It was a game of surprises and a comparatively easy victory which promised, early in the match, to be quite different. The first game was played to a beautiful draw, but Lewis made a weak opening in the second game and Byars took his chance. In the next two games he played with steady foresight to win well.

Over a period of years Mr. Byars has entered the Ayrshire tournament ten times, and ten times he has reached the final. Only twice did he lose. In the past six years he has played fifty



Mr. Neil Byars (left) and Mr. John Lewis ponder the next moves in the Ayrshire draughts final

games in the Ayrshire championship, won 27 of them, drawn 22, and lost only one game. This is a magnificent record, and naturally the man who plays so well is much respected throughout Scotland.

On the board sound theory guides all his practice, and in off-moments he loves to talk about the great moves of the past and hint at magnificent moves of the future. There will be other triumphs for Neil Byars, and perhaps one of these days he will realise a bigger ambition and win the Scottish championship.

Building a New Railway

At a time when many branch railway lines are being closed a new one in Ayrshire is about to be opened. It will not compete with the established lines, but it will be highly popular and satisfy a demand in the West of Scotland.

The new line is being built by members of Ardeer Recreation Club's Engineering Section in their spare time and will be permanently laid on a piece of land to the north of the cricket ground. It will give builders of model locomotives a track on which they can try out their productions under running conditions and make a worth-while diversion for children on special occasions.

The track will provide some 500 ft. in continuous running circuit, with straights and curves. The line is cunningly banked and will pass through a small cutting. At the moment part of the bed has been laid, and weekend work should ensure that the track is ready in time for the Coronation.

The Model Engineering Section members are good at this type of work and have already added to the value of club amenities by building a workshop for themselves.

The new track, when it is complete, will be of interest to model engineers all over the West of Scotland. There are only two other permanent ways on which model locomotives can be tried out—one in Glasgow and the other in Falkirk.

PAINTS DIVISION

The Philosopher in the Paint Shop

Everybody on the Slough site regards Mr. Henry Charles Smith of the Paint Shop as "a character." They have good authority for that opinion. On 26th June, 1925, *The Times* gravely announced: "This Charlie Smith of Deptford, who,

if he were not so young, could be regarded as a character, seems to have been born especially to destroy the pretensions of all but the really efficient."

And Charlie Smith of Deptford, the boxing idol of the twenties, who chased Phil Scott to America and back, then presented a lesser man with the heavyweight championship of Great Britain—he and Mr. Henry C. Smith of Slough Paint Shop are the same man.

To have had 120 fights and lost only twenty of them is something. To have thrashed Reggie Meen three times and still have had to concede him the title is heartbreaking. To have caused tumult in Madison Square Garden as you licked King Solomon, and anguish in Wales as you slashed its idol Jack Peterson into ribbons, is wonderful to recall; but it does not make a man a character, for this is not a physical quality at all.

Charlie Smith became a character at the age of 15, when, overgrown, pigeon-chested, timid and cruelly handicapped by a stammer, he decided to join a boxing gymnasium.

On his 17th birthday he won the novices heavyweight competition at the old National Sporting Club. Then he continued fighting until the small press paragraphs—"This remarkable lad has a stance which breaks all the accepted rules, and a Grock-like smile which appears to regard fighting as a joke"—grew into black headlines greeting the "new white hope" as "one of the finest defensive boxers Britain has ever had."

But after losing his title fight with Reggie Meen on points—most unlucky, said the critics—and losing the British heavyweight fight of the century against Jack Peterson, he decided to retire at the age of 29.



"Charlie Smith of Deptford" (right), with Gypsy Daniels, heavyweight champion of Wales, and trainer Teddy Johns

When he is asked why he retired from boxing while he was still at the top, Mr. Smith says philosophically: "I had the fun of climbing to the top, didn't I? That left Phil Scott and Jack Stanley between me and the championship. I knocked out Jack, but Scott wouldn't fight me. All those years of struggle, and no title after all. So I thought it out like this. Every boxer must have a certain amount of luck. If you haven't got luck behind you, you can struggle and finish up deaf, blind, and

crazy in the head. I am 48 and unmarked. I am 6 ft. 3 in. tall, 48 in. round the chest, and I've still got my own teeth. I have a good wife, my own house, and enough money in the bank for old age. If I could have my time over again I would still be a boxer, because it made a man of me, but I would still retire at the same age. Only I would join I.C.I. straight away next time."

Sunken Message starts Pen-friendship

A message which has come up from the sea bed after being submerged for ten years has founded an overseas pen-friendship between Miss Margaret Morecroft, of Division Development Department, and Mr. Einar Marcussen, of Bergen in Norway.

The story begins in the early days of the war, when Miss Morecroft was helping to assemble emergency food packs for the troops in the Middle East. Like most people, she occasionally included in these a good-luck message to the unknown recipient.

The food pack in question was evidently a victim of enemy action at sea, for it was recently washed ashore in a Norwegian fiord and recovered by Mr. Marcussen. He returned Miss Morecroft's message to her; despite the long immersion it was still legible.

As a result of this a regular correspondence has developed in mixed Anglo-Norwegian. "He cannot write much English," says Miss Morecroft, "but we get along. The thing is, that parcel should never have gone to Norway!"

Laboratory Assistant's Flying Scholarship

Peter Prime, aged 17, a laboratory assistant at Stowmarket, who is also a flight sergeant with the Stowmarket A.T.C., already holds both his A and B Glider Pilots Training Certificates and in consequence is now a fully qualified glider pilot.

A few months ago he became the only person in Suffolk to obtain a pass with distinction in an Air Ministry proficiency examination. As a result of this fine achievement he has been awarded a flying scholarship valued at £150. In December he passed a medical examination and interview and can now take advantage of a course lasting three weeks at Marshalls Airport, Cambridge, where he will train as a pilot up to civilian standard.

Peter's father has worked as a colour matcher in the 'Belco' Department for many years.

Paints in the Monte Carlo Rally

British cars swept the board at the 23rd Monte Carlo car rally, and for the fifth consecutive year Paints Division supplied the special material used on all entries, both at the seven starting points in Europe and at the finish, which ensures that no vital mechanical parts are changed during the 2500-mile dash to victory—or honourable defeat.

To ensure complete security the formula of the special sealing composition is changed every year.

The plaque illustrated here, which was presented to Paints Division in 1950, after the 20th rally, has in effect been renewed in each subsequent year by most generous letters of



thanks from the president of the International Sporting Club at Monte Carlo.

PLASTICS DIVISION

Ex-I.C.I. Channel Swimmer turns Author

Aspiring Channel swimmers in I.C.I. can be sure of a good send-off if they make a start from Folkestone. In charge of the open-air baths there, the training quarters chosen by many Channel swimmers, is Mr. Sam Rockett, who left Plastics Division after his successful Channel swim two years ago.

Mr. Rockett returned to England recently after making a lecture tour in the U.S.A. Channel swimming is a topic of great interest there, he says, and he had to turn down engagements—since his time was limited—as far afield as Georgia and South Carolina. He plans to return to America next year on a more ambitious lecture circuit. Meanwhile he has written a book on Channel swimming which he hopes to have published in this country and America.

WILTON WORKS

Two Divisions in "Operation Blast"

Recently Nobel Division joined forces with Wilton in what might well have been termed "Operation Blast." It had all the planning, precision, timing and nervous tension of a wartime operation.

With the ever-increasing growth of the industrial site at Wilton Works into what in due course will be the largest factory in I.C.I., the disposal of drainage is a very big problem. This is carried by large culverts, capable of holding millions of gallons of water, to the shore adjoining the mouth of the river Tees and is there held by a sluice. The operation of the sluice is controlled by a lunar clock, which operates on the time cycle maintained by the moon, and not by the sun as is usual in ordinary clocks. This time cycle is in agreement with the timing of the tides, and the sluice is opened at the right time of each tide to permit the effluent to be released, when it is carried out to sea by the flow of the river and the outgoing tide. The maximum flow of drainage in periods of heavy storm is upwards of 25,000,000 gallons a day, and this regular rush of water has scoured a channel across the sands of the river foreshore over a stretch of land which does not belong to I.C.I.

The very difficult problem which called forth "Operation Blast" was the construction of a drainage channel across I.C.I. ground between the high and low tide levels to convey the effluent stream direct on its course to the sea. To do the work by conventional means was impracticable on account of the treacherous nature of the sand and the regular drowning of the work by the tides. So Nobel Division Technical Sales Service were consulted about the practicability of cutting a new channel by explosives in the six hours available between tides.

Tests indicated the most effective method would be to use 1 lb. charges of 'Polar Ammon Gelatine' dynamite at 3 ft. spacing, each charge being buried 2 ft. deep. With this technique the new channel was expected to have a width of not less than 6 ft. and a depth of approximately 3 ft. to 3 ft. 6 in. To cut a channel about 1200 yards long rather more than 1200 separate charges were needed, all connected with 'Cordtex' instantaneous fuse. The whole of the charging, fusing, firing and washing out of the new channel had to be completed within six hours. What a problem!

All preparations were made, and "blast" day was finally fixed for 4th December, when the tides would be suitable and the preparations completed.

On a cold, misty morning, long before dawn, the explosives van and the lorry carrying the men and materials to the temporary headquarters of "Operation Blast" made their way across the bleak marshland.

Quietly and systematically the unloading of the explosives was started, along with the business of laying out the charges, cutting the lengths of 'Cordtex' for priming each charge, priming, and then reloading in containers for transport across the sands. As dawn broke three-man teams moved out across the sands, following the receding tide. Each team worked methodically, plunging a 3 in. hole in the sand and mud and inserting the charge with the end of the 'Cordtex' trailing out in shallow water. Then the twin trunk main of instantaneous fuse was run out along the line of blast, each charge being coupled to it.

As noon approached the danger flags were hoisted and outlying guards posted to prevent the inadvertent entry of a stranger looking for ground bait. Everyone was cleared from the area to a safe distance, leaving only Mr. Riley of Nobel Division and Mr. Evans of Wilton Site Maintenance Section to carry out their final check as Mr. Johnson of Nobel made the final connection from the detonators to the exploder.

At 12.14 p.m., with the cameras whirling and clicking and the spectators ducking behind the protection of the high tide wall, the signal to fire was given. Like the rush and thunder of an express train, thousands of tons of sand and silt were thrown into the air in a mighty curtain. Almost as quickly, down splattered the debris over an enormously wide



Wilton's big bang: 1200 lb. of dynamite clear a channel to the Tees

and long area. The sluice gates were immediately opened and millions of gallons of pent-up water rushed from the culvert to freedom. Down the new channel it rushed and gurgled, sweeping before it the loose debris from the channel. For those who witnessed "Operation Blast" it was a sight not to be forgotten quickly, and for those who heard the explosion as far away as Middlesbrough, Guisborough and Saltburn it was a puzzling thought as to what had happened, until they read the news in the evening papers.

To the men who worked in the bitter cold of that morning and to the Nobel Division we say "A good job well and expeditiously done."

A.E. & C.I.

A New Director Appointed

Mr. G. M. Mason, who was recently appointed a director of African Explosives and Chemical Industries Ltd., is an economist who remains an optimist.



Mr. G. M. Mason

He came down from Cambridge in 1928 and joined the Treasurer's Department under Mr. Minto, and there, in his own words, he "washed out the inkwells." He must soon have displayed his flair for dealing with difficult problems, for in 1933 he was appointed secretary of a concern with the colourful title "The Finance Company of Great Britain and America." Due largely to the financial crisis, this grand project went into liquidation. Had

it still been alive it might have handled the administration of Lease-lend; possibly Marshall Aid would have become Mason Aid, and instead of being a director of A.E. & C.I., "G. M." might have found himself telling us, from the austerity of Washington, how to work harder for our bread and butter!

From dollars Mr. Mason turned to gold and in 1936 became the London secretary of A.E. & C.I. During the war years he worked with Mr. Butchart on government contracts and afterwards returned to take charge of African Department.

I.C.I. (HOLLAND)

Flood Damage in Rotterdam

The recent floods in Holland have been an unparalleled disaster in the extent of the loss of life and damage to property, from which, according to reports, it may take some years to recover.

I.C.I. (Holland) was fortunate in that none of their staff suffered anything more than considerable personal inconvenience. The basement of their new building in Rotterdam, in common with all other basements there, was flooded, in spite of the fact that in the construction of the building a safety margin had been allowed of 12 inches over the previous highest known flood level. The water topped this previous level by 20 inches.

The photograph on page 92 was taken after the water had receded, and shows a barge stranded on the road outside I.C.I. (Holland)'s office. One respect in which the Company seems to have been almost unique is the fact that they had insured their stocks against floods. This was fortunate because there was, of course, some damage. Stocks of sodium cyanide proved particularly difficult to handle, owing to the formation of hydrocyanic fumes when water seeped into the drums. The fumes are highly poisonous and very difficult to dispose of even under normal conditions. However, thanks to the co-operation of a Dutch cyanide manufacturer efforts to get rid of what had become a most unwelcome material were successful.

Holland was particularly hard hit financially by the war, but as a result of years of hard work and self denial she seemed very largely to have recovered. Of late the extent of this



A barge lies stranded outside the Rotterdam office after last month's floods

recovery has been so spectacular that the Belgian press have been referring to it as "Le miracle hollandais." The new catastrophe brought by the floods is therefore particularly tragic.

I.C.I. (TURKEY)

The Ones that Got Away

In their travels on behalf of the Company I.C.I. men sometimes penetrate into little-known corners of the world. One such is Urfa, in eastern Turkey, where the remains of the ancient castle of the cruel Assyrian king Nimrod tower over a pool of crystal water, and from there Mr. C. S. H. Warr of I.C.I. (Turkey) brings back a traveller's tale which will make many fishermen gnash their teeth.

The pool, says Mr. Warr, is attached to a mosque and contains hundreds, perhaps thousands, of trout-like fish, each a foot in length and almost unbelievably tame. They have learned to expect food to be thrown to them; if you walk along the side of the pool they follow you in shoals, and the largest will even lift their open mouths above the water, begging for food.

And yet, in this fisherman's paradise, there was not so much as a small boy with a bent pin to be seen. Naturally Mr. Warr asked his guide the reason, and this was the tale he was told.

Many centuries ago the castle overlooking the present mosque was inhabited by the Assyrian king known as Nimrod the Cruel, who lived a heathen existence and was feared far and wide. Nimrod had a daughter known as Anzelea who was extremely beautiful and as good as he was bad.

One day a handsome prophet named Ibrahim Bergamma came to the castle, preaching the word of Allah, and he attempted to turn Nimrod from his cruel way of life, but he was not successful. The lovely Anzelea was swayed by the beauty of the prophet and by his teaching, and soon the young couple were hopelessly in love with each other.



Where fish beg to be fed: Halil Rahman mosque at Urfa, E. Turkey

At this the King was extremely angry and forbade his daughter to meet Ibrahim Bergamma, but she went against his will. Whereupon Nimrod cast the young lovers into a cell and prepared a grand feast to which he bade everyone come to see how he dealt with anyone—even his own daughter—who disobeyed his will.

At the foot of the escarpment, down below the formidable castle walls, he caused to be built the largest bonfire ever seen, and dragging the young couple to the top of the walls he flung them to their death into the heart of the raging fire.

No sooner had the bodies reached the fire than it was engulfed by a huge volume of water. When the clouds of vapour had cleared, there was a large placid pool inhabited by hundreds of fish. Not only had Anzelea and Ibrahim Bergamma taken the form of fishes, but each and every twig of the bonfire had also been changed to a like form, so that nobody could tell which of the fish was previously a twig or one of the young lovers.

For this reason nobody will take even one fish from the pool for fear of separating the young lovers who were themselves prepared to die rather than have this happen to them.

* * *

OUR NEXT ISSUE

What is the future of the chemical engineer? Should he be a chemist with a knowledge of engineering or an engineer with a knowledge of chemistry? And is it not the duty of the chemical industry to make up its mind as to the role the chemical engineer is expected to play so that the universities can shape their teaching to the requirements of industry? These are important and controversial questions on which Mr. J. E. Braham, I.C.I. Engineering Controller, expresses his personal views in the leading article of our April issue.

Our other main feature concerns the work of the Hawthorn-dale Research Station on the "screening" of new chemicals for insecticide use. More than one new and effective insecticide chemical has been discovered in recent years, and our article tells, largely in terms of pictures, the story of how these discoveries are made.

Next comes an article—by a member of Leathercloth Division—on the growing of the chrysanthemum, second only to the rose in popularity. And to wind up, Ronald Farquharson, I.C.I. Shipping Controller, writes a piece of satirical reminiscence poking a little good-natured fun at some of the types he has met on his travels abroad.

The quick brown fox jumps over the lazy dog.

Now is the time for all good men to come to the aid of the party.

The quick brown fox jumps over the lazy dog.

As it was in the beginning . . .

By Daisy Grocock

Being the true story of a typist's life in the years from 1909 to 1920

WHEN Mr. Churchill came out in a new hat like a sawn-off "topper" many newspaper commentators seemed to find it a novelty, but it did not surprise me, for when I first went into a City office in 1909 the senior partner in the firm of engineers and merchant shippers were just such a pot hat; so did many of his City friends; the junior partner and the shipping clerks wore straw boaters (as it was summer); the office boy a cap. I wore a straw hat with flowers on it, a long blue skirt and a striped cotton blouse.

On my first day the senior partner paused by my desk on his way to lunch, stove-pipe hat in hand, and said mournfully "You are not at all like Miss Scroggie." I had not met my predecessor, but to be unlike her was evidently a drawback, so depression was added to my nervousness. At the end of the day senior partner said "You seem to be better at the shorthand than the typing." This was not surprising, for the only typewriter in his office was the ancestor of all writing machines. It was massive, had no shift key for capitals, and had not a double but a *treble* keyboard, the top part providing odds and ends—dollars, cents, asterisks, and something that indicated the necessity to type divisional sums. It had no ribbon; instead, an inked pad in its middle, the keys stretching spidery legs,

inking their feet on the pad and transferring letters to the paper. The firm practised such small economies as not buying new pads when necessary. Instead the office boy inked the old pad, which he sometimes did over well, when my letters were smudgy for weeks.

On my second day senior partner complained "You look too young to be called 'Miss'—what is your Christian name?" I told him, but being deaf he thought I said "Gertrude." It was some time before I had the courage to correct him. In the meantime he called for "Gertie"—there were no buzzers or bells in the office.

I was the only typist and worked for everyone, excepting only the office boy. The hours were 9 to 6, and 2.30 on Saturdays. I wondered how the Saturday hours represented the weekly free half-day, since we seldom left before 3 o'clock, and no time was allowed to eat.

The shipping clerks sat on high stools either side of an old-fashioned, sloping desk. I had a table in the corner, and very naïve they must have found me. Before going the round of shipping offices they used to dictate lists of cargoes taken aboard or shut out of steamers, in case suppliers rang up for information. The telephone was a weird two-piece affair on a

wall bracket, and I was afraid of it. I managed to tell the first caller he had no cargo alongside the *Themistocles*. He replied "Nonsense, Miss; put me on to Miss Scroggie." I said she had left and I had replaced her. He snorted "How awful!" and rang off, leaving me shaken. I told the young clerk who first came in. He asked me to show him my book and laughed his head off at "The Miss Stockles."

That was exactly how his colleague had pronounced it, and I had not connected it with the Athenian general. It took me a few weeks to live down Miss Stockles, but some six months to live down Miss Scroggie.

The absence of the office boy for a fortnight necessitated my taking round the Gibson letters. The firm subscribed to an American service which sent an overnight cable with prices of shares and commodities. This cable had to be decoded and typed very fast and taken round to the City firms who shared the cost. I was unfamiliar with the City, have no bump of location, and it took me an hour and a half to do the round which the boy did in half an hour. The list was always the same, but I never learned the quickest way, always lost Threadneedle Street and Gracechurch Street, and was in Bishopsgate Street Within when I should have been in Bishopsgate Street Without.

My family said doubtfully "Will they keep you?" I said "Yes, of course," although I felt the Gibson letters would probably be the end of my job. They were not, though, for the office boy returned and did the round in half an hour.

A typist's wage started at 15s. a week, rising to £1 after six months. It was paid in gold; no deduction until 1912, and then only fourpence for health insurance. Few persons who were not adult before the 1914 war realise how much £1 bought in those days and how cheaply and well City workers lunched. There was a preponderance of male workers who lunched at "men only" restaurants and clubs; women mostly ate at tea-shops, which served light meals of excellent quality (nothing synthetic then) so quickly that we had half our lunch hour left for exploring the City or listening to organ recitals in the old churches. A queue then meant a Chinaman's pigtail, and the cafeteria was unknown.

It was not until the beginning of the first world war that women really gained a place in commercial life, and still against prejudice. A friend who was admitted, after severe examination, to the staff of a very conservative bank told me "Our standing is below that of the messengers. We may speak to the men only about work, nor may we use the same staircase as they." It seemed difficult to imagine what indiscretion could take place on a staircase!

We worked late on Fridays, and I usually had to gallop to the G.P.O. to get letters into the Australian mail by eight o'clock (with luck they reached the addressees in six weeks). It was in the quietness of such summer evenings that one felt the quality of the ancient city and its historical past, when in the

sunset glow it became like the poet's "Rose-red city, half as old as time." On one such night in 1912 the newsboys cried the sinking of the giant White Star liner *Titanic*, with the loss of 1500 lives. This seemed to us to touch the utmost height of disaster, just as Dr. Crippen's murder of his wife sounded the depths of horror.

In those days there was no major war anywhere in the world, and no one had yet dropped a bomb from the air. Luckily we could not foresee that war would twice engulf us in the next few decades, and that "progress" would wipe out the quiet of the old world for ever.

My next job was in an obscure lane in Westminster. The rooms were small, dark, stone floored, and lighted with gas (in 1917). Everything was to match, very old-fashioned. The firm had not apparently heard of carbon paper, and every evening the letters had to be placed in a book with tissue leaves, covered with wet cloths and fastened into a copying press. I was not good at it and usually made the rags too wet, when I had to dry the letters on the hearth. Once I left them there too long and they ended up like ginger biscuits, most of them having to be retyped.

I complained loudly that I was unlucky, and Phoebe, my superior in the office, rapped out (looking at me as though she were about to commit me for contempt of court) "I don't—I think you're careless!"

I hardly ever *saw* Phoebe because she lived behind a huge roll-top desk, from which spot she constantly admonished me. Her great fear was that I should not have enough to do; also that I should waste stationery. Spoiled sheets that I dared not put in the waste-paper basket I slipped inside my blouse, so that I must have looked a bit odd on some evenings when I left. I admired Phoebe, for she did more work than anyone else in that office: she never wasted a minute and all the time I was there had only one morning off—to attend a funeral. My third winter there was a cold one; mist rose up from the stone floors, joined the fog seeping in the windows and formed haloes round the gas globes. I decided to move on. Phoebe said "You are making a great mistake; you will never get another job like this." I did not tell her that was my express intention.

My third job was with one of the four companies which later merged to form I.C.I. The first piece of dictation I took there seemed to me odd, for it was a lengthy cable, apparently without context, and full of such words as trinitrotoluol, lyddite, cheddite, kieselguhr and Umbogintwini. Odder still seemed (after my rather drab experiences) the large bright offices, carpeted floors, the friendly spirit of my new employers, and the fact that no one admonished from behind roll-top desks or ordered from anywhere. In fact it all seemed so pleasant that I decided the firm could not last and that I would remain only the thirty days necessary to get a month's wages and would find something more realistic.

I stayed nearly thirty years.



A CITY OFFICE IN 1909, modelled in paper cut up with scissors by Dorothy Rogers



"The Morning's Shopping—in France"

Photo by Miss E. Atkins (Head Office)